[Edition of March, 1906.]

United States Department of Agriculture,

BUREAU OF SOILS.

LIST OF PUBLICATIONS OF THE BUREAU OF SOILS.

[The publications having a price attached can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., if the proper sum is sent in postal notes or currency.]

ANNUAL REPORTS.

[The annual reports of the Chief of the Division of Soils are bound with those of the Secretary of Agriculture, and since 1896 have also been published separately.]

Report of the Chief of the Division of Agricultural Soils for 1894. By Milton Whitney. In Annual Report Secretary of Agriculture for 1894. Pp. 199–201. (Exhausted.)

Report of the Chief of the Division of Agricultural Soils for 1895. By Milton Whitney. In Annual Report Secretary of Agriculture for 1895. Pp. 179–182. (Exhausted.)

Report of the Chief of the Division of Agricultural Soils for 1896. By Milton Whitney. Pp. 239–242. 1896. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1896.)

Report of the Chief of the Division of Soils for 1897. By Milton Whitney. Pp. 153–157. 1897. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1897.)

Report of the Chief of the Division of Soils for 1898. By Milton Whitney. Pp. 133–142. 1898. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1898.)

Report of the Chief of the Division of Soils for 1899. By Milton Whitney. Pp. 101–111. 1899. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1899.)

Report of the Chief of the Division of Soils for 1900. By Milton Whitney. Pp. 67–83. 1900. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1900.)

Report of the Chief of the Division of Soils for 1901. By Milton Whitney. Pp. 113–140. 1901. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1901.)

Report of the Chief of the Bureau of Soils for 1902. By Milton Whitney. Pp. 40–75. 1902. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1902.)

Report of the Chief of the Bureau of Soils for 1903. By Milton Whitney. Pp. 199–226. 1903. (Exhausted.)
(Reprinted from Annual Reports Department of Agriculture for 1903.)

Report of the Chief of the Bureau of Soils for 1904. By Milton Whitney. Pp. 241–269. 1904. (Exhausted.)

(Reprinted from Annual Reports Department of Agriculture for 1904.)

Report of the Chief of the Bureau of Soils for 1905. By Milton Whitney. Pp. 239–272. 1905.

(Reprinted from Annual Reports Department of Agriculture for 1905.)

BULLETINS.

Bulletin No. 1. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Month of May, 1895. Pp. 16, diags. 14. 1895. Price 5 cents. (Exhausted.) (3)

The marked effect of different amounts of rain upon the yield and quantity of crops is familiar to all in the every day experience of farmers. It is shown in the records here presented from fourteen selected localities in four States that, owing to the difference in the texture of the soils, even with the same amount of rainfall, soils retain very different amounts of water. As crops require very different conditions of water for their best development, this difference in the water content of soils very largely accounts for the peculiar adaptation of certain soils to certain classes of crops.

Bulletin No. 2. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Month of June, 1905. Pp. 16, diags. 19. 1895. Price 5 cents. (4)

The records described in Bulletin No. 1 are continued and records are given from other places. Particular attention is called to the great differences in water content of soils adapted to different kinds of tobacco and to grass and early truck crops.

Bulletin No. 3. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Month of July, 1895. Pp. 23, diags. 20. 1895. Price 5 cents. (Exhausted.) (5)

The records above described are continued and records from some additional places are given. The mechanical analyses of some of the soils are given, showing great differences in the texture of the soils, which account for the differences in water content and for the differences in the character of the crops grown.

Bulletin No. 4. Methods of the Mechanical Analysis of Soils and of the Determination of the Amount of Moisture in Soils in the Field. Pp. 24, fig. 1. 1896. Price 5 cents. (Exhausted.) (6)

A description of the methods of mechanical analysis of soils and of the determination of moisture in arable soils, for the instruction of the observers and special agents of the Division and for the information of workers in the agricultural colleges and experiment stations. These methods have since been materially modified.

Bulletin No. 5. Texture of Some Important Soil Formations. Pp. 23, pls. 35. 1896. Price 15 cents. (Exhausted.) (7)

The investigations of this Division on the physical properties of soils throw an important light upon the relation of soils to crops and upon the local distribution of crops. It is not claimed that these are the only factors determining the relation of soils to crops, but it is believed that these investigations show that the physical conditions in many of these great soil areas have such a predominating influence upon the life and development of plants as to be a controlling factor in the distribution of crops.

Bulletin No. 6. An Electrical Method of Determining the Moisture Content of Arable Soils. By Milton Whitney, Frank D. Gardner, and Lyman J. Briggs. Pp. 26, figs. 6. 1899. Price 5 cents. (8)

This is a technical bulletin, describing a new electrical method for determining the moisture content of soils in the field, intended mainly for those interested in the development of soil investigations.

Bulletin No. 7. An Electrical Method of Determining the Temperature of Soils. By Milton Whitney and Lyman J. Briggs. Pp. 15, fig. 1. 1899. Price 5 cents. (9)

This is a technical bulletin describing a new electrical method of determining the temperature of soils.

Bulletin No. 8. An Electrical Method of Determining the Soluble Salt Content of Soils, with some Results of Investigations on the Effect of Water and Soluble Salts on the Electrical Resistance of Soils. By Milton Whitney and Thos. H. Means. Pp. 30, figs. 6. 1897. Price 5 cents. (10)

A new electrical method for determining the soluble salt content of soils in the field, which has been somewhat modified for use in the survey and mapping of alkali lands in the arid portions of the West.

Bulletin No. 9. Soil Moisture. A Record of the Amount of Water Contained in Soils during the Crop Season of 1896. By Milton Whitney and Ralph S. Hosmer. Pp. 23, diags. 12. 1897. Price 5 cents. (11)

The results of the moisture records in typical soils in different parts of the United States, establishing for the first time the lines of excess of moisture and of drought in a number of these soils, and discussing the conditions influencing the relations of soils to water.

Bulletin No. 10. The Mechanics of Soil Moisture. By Lyman J. Briggs. Pp. 24, figs. 7. Price 5 cents. (12)

A technical bulletin for the student of agricultural science, explaining more fully and clearly than ever before the actual cause of the capillary movement of water in soils. It gives a clearer knowledge of the laws and principles governing this movement than we have ever before possessed, which, it is needless to say, is a subject of vast practical importance to the agriculturist, as the relation of soils to water and the movement of water in the soil, away from or up to the plant, largely determines the class of crops which can be successfully grown. It discusses the properties of water affecting its retention and movement in the soil, the properties of films of water, the form of the water surface between soil grains, and the influence of salts, temperature, texture, and structure of soils in the acquirement and retention of soil moisture.

Bulletin No. 11. Tobacco Soils of the United States: A Preliminary Report Upon the Soils of the Principal Tobacco Districts. By Milton Whitney. Pp. 47, pls. 13. 1898. Price 10 cents. (13)

The results discussed in this bulletin show a very marked difference in the texture and physical properties of the soils adapted to the different types, classes, and grades of tobacco, and give a basis for the classification of the soils and for determining the class of tobacco which should be grown on them.

Bulletin No. 12. The Electrical Method of Moisture Determination in Soils: Results and Modifications in 1897. By Frank D. Gardner. Pp. 24, figs. 2, pls. 3. 1898. Price 5 cents. (14)

Different sections of the country and different types of soil were selected to give a thorough test to the electrical method of moisture determination in soils in the field. The results herewith recorded were very satisfactory and, besides showing that the method is adapted to general use, the results throw some additional light upon the relation of soils to water.

Bulletin No. 13. A Preliminary Report on the Soils of Florida. By Milton Whitney. Pp. 31, pls. 6, figs. 3. 1898. Price 5 cents. (15)

This report discusses the texture and physical properties of pine lands, hammock lands, Etonia scrub lands, pineapple lands, and the Lafayette formation of western Florida; with a brief description of truck growing and of tobacco growing; and a discussion of the texture, chemical composition, soluble salt content, and moisture content of the principal soil formations of Florida.

Bulletin No. 14. The Alkali Soils of the Yellowstone Valley, from a Preliminary Investigation of the Soils near Billings, Montana. By Milton Whitney and Thos. H. Means. Pp. 39, pls. 17, figs. 3. 1899. Price 15 cents. (21)

This report deals with the origin of the alkali soils; the formation of the soils; the geological structure of the valley at Billings; the method of determining the soluble salt content of soils; the rainfall and seepage; the salt content of soils; with underground maps of the alkali soils of the locality. In general it describes the cause of the rise and accumulation of alkali and the proper methods of treatment to prevent injury from this source and to reclaim the already damaged lands.

Bulletin No. 15. Electrical Instruments for Determining the Moisture, Temperature, and Soluble Salt Content of Soils. By Lyman J. Briggs. Pp. 35, figs. 12. 1899. Price 5 cents. (23)

This is a technical bulletin describing late forms of electrical instruments in use at the present time for determining the moisture, temperature, and soluble salt content of soils.

Bulletin No. 16. Catalogue of the First Four Thousand Samples in the Soil Collection of the Division of Soils. By Milton Whitney. Pp. 145. 1899. Price 10 cents. (25)

This is a bulletin of which only a limited edition was published, describing the soil collection; classifying the samples under each State according to their geological origin and their agricultural value; with a description of the formations represented in the collection, which includes the most important soil formations of the United States and of a few foreign countries.

Bulletin No. 17. Soil Solutions: Their Nature and Functions and the Classification of Alkali Lands. By Frank K. Cameron in cooperation with the Division of Chemistry. Pp. 39. 1901. Price 5 cents. (41)

This bulletin contains a series of technical papers discussing the nature and function of the aqueous solution of which the soil moisture is composed, in its relation to crop failure, and from the point of view of the hypothesis of electrolytic dissociation. A classification of alkali soils upon a chemical basis is proposed, and the occasional occurrence of alkali conditions in humid areas is considered, with descriptions of certain cases which have come under the author's observations.

Bulletin No. 18. Solution Studies of Salts occurring in Alkali Soils. By Frank K. Cameron, Lyman J. Briggs, and Atherton Seidell. Pp. 89, figs. 10. 1901. Price 5 cents. (42)

This bulletin contains a series of technical papers discussing the equilibrium between carbonates and bicarbonates; the solubility of gypsum and calcium carbonate in aqueous solutions containing soluble salts; the chemical analysis and examination of alkali soils; and the volumetric estimation of carbonates, bicarbonates, and chlorides. This work was undertaken to elucidate difficulties met in field studies of alkali conditions, and practical applications suggested by the laboratory studies are pointed out and discussed.

Bulletin No. 19. Capillary Studies and Filtration of Clay from Soil Solutions. By Lyman J. Briggs and Macy H. Lapham. Pp. 40, figs. 5. 1902. Price 5 cents. (61)

This is a technical bulletin dealing with the influence of dissolved salts on the capillary rise of salt waters and capillary movement of water in dry and moist soils, and the filtration of clay from soil solutions.

Bulletin No. 20. Growing Sumatra Tobacco under Shade in the Connecticut Valley. By Milton Whitney. Pp. 31, pls. 7, figs. 2. 1902. Price 10 cents. (65)

This is a detailed statement relating to the experiments which have been conducted in Connecticut, under the direction of the Bureau of Soils, in connection with the production of a fine type of wrapper tobacco under shade. This bulletin describes in detail the methods of cultivation and handling of the tobacco, including the selection of the land,

preparation of seed beds, erection and cost of shade, cultivation, fertilization, harvesting, curing, fermenting, sizing, assorting, baling, and the final results of the experiment, including the cost of each of these operations and the total cost of the crop.

Bulletin No. 21. Reclamation of Alkali Lands in Egypt, as Adapted to Similar Work in the United States. By Thomas H. Means. In Cooperation with the Office of Seed and Plant Introduction, Bureau of Plant Industry. Pp. 48, pls. 8, figs. 6. 1903. Price 15 cents.

This bulletin is a report of information gathered during a visit to Egypt in the summer of 1902. It gives a detailed description of some of the important reclamation work in that country and shows that the methods there in use are applicable to conditions in the United States.

Bulletin No. 22. The Chemistry of the Soil as Related to Crop Production. By Milton Whitney and F. K. Cameron. Pp. 71. 1903. Price 5 cents.

This bulletin is a report of an investigation of the changes taking place during a growing season in the composition and concentration of the soil water in several types of soil under field conditions. It is shown that the chemical data obtained can not be correlated with the known crop production, and that the composition of the soil has no greater importance in determining the yield of crops than has the climate, soil management, selection of seed, and other factors. It is further shown that practically all cultivable soils normally supply enough water-soluble, and therefore available, mineral constituents for plant needs, and that the desirable effects obtained from the use of mineral fertilizers are not satisfactorily or entirely explained by the hypothesis that they supply needed plant food.

Bulletin No. 23. Investigations in Soil Fertility. By Milton Whitney and F. K. Cameron. Pp. 48, pls. 4, figs. 7. 1904. Price 10 cents.

This bulletin contains a description of experiments upon the movement of water in soils; the ability of seeds to obtain water from the soil; the development of root systems in plants as contrasted with the rate of movement of soil moisture; the relative growth of plants in good and poor soils, respectively, and in aqueous extracts of the soils, as well as in artificial nutrient media; and the effect upon plant growth of the presence or absence of organic matter in soils and soil extracts.

Bulletin No. 24. The Centrifugal Method of Mechanical Soil Analysis. By Lyman J. Briggs, F. O. Martin, and J. R. Pearce. Pp. 38, pls. 2, figs. 7. 1904. Price 10 cents.

This bulletin contains a description of the centrifugal method of mechanical soil analysis, as used in the Bureau of Soils, together with an account of certain investigations of the various features of the method. For the information of students, and others interested in the subject of mechanical analysis, a brief description of other methods of mechanical analysis at present used in the United States is appended. An account is also given of the chromic-acid digestion method for determining organic matter in soils.

Bulletin No. 25. Contributions to our Knowledge of the Aeration of Soils. By Edgar Buckingham. Pp. 52. 1904. Price 10 cents.

This is a technical bulletin containing experimental and theoretical investigations of the movement of air and carbonic acid through soils of various types in varying physical condition. It is shown that the aeration of soils is due mainly to diffusion and not to change of the barometric pressure, and that the rapidity of aeration depends mainly upon the porosity of the soil and only to a minor degree on the type of soil and its state of granulation.

Bulletin No. 26. Investigations in Soil Management. By F. H. King. Pp. 205. 1905. Price 15 cents.

This bulletin contains a description of field experiments in soil management on eight soil types of widely varying fertility, at four stations in different parts of the United States. Each soil type was subjected to different degrees of fertilization with stable manure and commercial fertilizer. Corn and potatoes were the crops grown. The bulletin gives the complete records of these extended investigations, including crop yields, amounts of moisture and readily soluble salts in the soils during the growth of the crops, together with the soluble salts found in the crops themselves at various stages of development, and a full record of the temperature of the air and the soil, rainfall, and other meteorological observations made at these stations during the growing season.

Bulletin No. 27. Experiments in Growing Cuban Seed Tobacco in Texas. By George T. McNess. Pp. 44. 1904. Price 5 cents.

This is a detailed report of the experiments conducted in Texas under the direction of the Bureau of Soils. This bulletin describes in detail the methods of cultivation and handling, including selection of soils, manipulation of seed beds, cultivation, fertilization, harvesting, curing, fermentation, assorting, baling, and the final results of the experiments, including the cost of each operation and the total cost of growing the crop.

Bulletin No. 28. Studies on the Properties of an Unproductive Soil By Burton Edward Livingston, J. C. Britton, and F. R. Reid Pp. 39. 1905. Price 5 cents.

This bulletin is the report of an investigation on the physiological properties of an unproductive soil by growing wheat seedlings in the soil contained in paraffined wire-net baskets and in aqueous extracts prepared from the soil. It is shown that the soil contains a water-soluble nonvolatile substance or substances, probably organic in their nature, which are toxic to wheat plants, causing a stunting of their growth.

Bulletin No. 29. Tobacco Investigations in Ohio. By George T McNess and George B. Massey. Pp. 38. 1905. Price 5 cents.

This is a report on the work that has been conducted in Ohio by the Bureau of Soils in connection with the production of a high grade Cuban seed filler and the bulk fermentation of the native Ohio filler tobaccos. The bulletin describes in detail the methods of cultivating and handling the tobacco, including the selection of the land, preparation of seed beds, cultivation, harvesting, curing, fermenting, and baling, and gives the final results of the experiment, including the cost of every operation.

Bulletin No. 30. The Mineral Constituents of the Soil Solution. By Frank K. Cameron and James M. Bell. Pp. 70. 1905. Price 5 cents.

This bulletin is the report of investigations on the minerals found in soils and the effect of various agencies on the solubility and hydrolysis of these minerals. It is shown that nearly all the common rock-forming minerals are found as such in all arable soils and that their slow but continued solubility is sufficient to maintain the concentration of dissolved mineral constituents in the free soil moisture. Experiments on absorption and flocculation are also described and discussed in their relation to the chemistry of the soil solution.

Bulletin No. 31. Colorimetric, Turbidity, and Titration Methods used in Soil Investigations. By Oswald Schreiner and George H. Failyer. Pp. 60. 1906. Price 5 cents.

This is a technical bulletin describing in detail the construction and operation of the apparatus for obtaining soil extracts and the analytical methods used in the laboratories of the Bureau, together with the description of a colorimeter devised for the work.

Bulletin No. 32. The Absorption of Phosphates and Potassium by Soils. By Oswald Schreiner and George H. Failyer. Pp. 41. 1906.

A technical bulletin giving the results of investigations on absorptive power of soils of different textures on these two salts. The absorption from solution of known concentration is determined, and the retention of the absorbed salts by the soil in the presence of percolating distilled water are shown in an interesting and instructive series of experiments.

REPORTS OF FIELD OPERATIONS.

The Report of the Field Operations is issued annually and contains the results of the soil-survey work of the Bureau for the calendar year named. A general review of the operations of the year by the Chief of the Bureau is presented, showing the progress and cost of the soil survey and giving a general analysis of field reports, with discussions of such important problems as may have arisen. Lithograph maps, drawn on a scale of one mile to the inch, covering each area surveyed, indicate in colors the location and extent of the various soil types,

and, in addition, in the western areas, the distribution of alkali lands. The reports of assistants in charge of soil surveys treat each area in detail and contain carefully prepared data relating to the location and boundaries of the areas; the history of settlement and agricultural development; climate; physiography and geology; descriptions of soil types, with origin and process of formation, crops grown and the yields, the crops to which the soils are especially adapted, special soil problems, irrigation, and drainage; location, origin, composition, and distribution of alkali; reclamation of swamp, exhausted, or alkali lands; agricultural methods in use, cultivation, cropping, rotation, etc., and general agricultural conditions, including the condition of the farming classes, tenure, and size of farms, labor, transportation, markets, etc. The first two reports also contain chapters contributed by other members of the staff of the Bureau pertaining to special problems affiliated with soil investigations.

The demand for the annual Reports of Field Operations of the Bureau of Soils for 1899, 1900, 1901, 1902, 1903, and 1904 has been so great that the quota allotted to the Department for distribution to exchanges, libraries, and other public institutions and to private persons cooperating has been reduced to such an extent that it will be necessary to restrict the distribution of the bound volumes of these publications as much as possible.

Many applications for the reports named are from persons interested in only one or two areas, and to provide for such requests separate reprints of the reports and maps in pamphlet form, covering each of the areas surveyed, have been obtained, which will in many cases answer the purpose of the correspondent. A list of these reports and reprints follows, and any available reprint desired will be forwarded upon application to the Chief of the Bureau of Soils.

Copies of the bound volumes are on sale by the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices named.

Field Operations of the Division of Soils, 1899. (First Report.) By Milton Whitney, Chief of Division. With accompanying papers by Thomas H. Means, Frank D. Gardner, Clarence W. Dorsey, Frank K. Cameron, and Lyman J. Briggs. Pp. 198, pls. 29, figs. 19, lithograph maps 11. 1900. Price 95 cents.

REPRINTS.

A Soil Survey in the Pecos Valley, New Mexico (parts of Eddy and Chaves counties, 129 square miles): Two soil maps, 2 alkali maps, 2 underground water maps. By Thomas H. Means and Frank D. Gardner. (Reprint exhausted.)

A Soil Survey in Salt Lake Valley, Utah (part of Salt Lake County, 249 square miles): One soil map, 1 alkali map, 1 black alkali map, 1 underground water map. By Frank D. Gardner and John Stewart.

A Reconnoissance in Sanpete, Cache, and Utah Counties, Utah. By Thomas H. Means. (Reprint exhausted.)

A Reconnoissance in the Cache la Poudre Valley, Colorado. By Thomas H. Means. (Reprint exhausted.)

A Soil Survey in the Connecticut Valley, Connecticut and Massachusetts (parts of Hartford (Conn.) and Hampden counties, Mass., 388 square miles): One soil map. By Clarence W. Dorsey and Jay A. Bonsteel. (Reprint exhausted.)

Field Operations of the Division of Soils, 1900. (Second Report.) By Milton Whitney, Chief of Division. With accompanying papers by Thomas H. Means, Frank D. Gardner, Clarence W. Dorsey, Jay A. Bonsteel, William G. Smith, J. Garnett Holmes, Frank K. Cameron, Lyman J. Briggs, and Marcus L. Floyd. Pp. 474, pls. 51, figs. 47, lithograph maps 24. 1901. Price $1.80.

REPRINTS.

A Soil Survey around Lancaster, Pennsylvania (part of Lancaster County, 269 square miles): One soil map. By Clarence W. Dorsey.

Soil Survey of Montgomery County, Ohio (480 square miles): One soil map. By Clarence W. Dorsey and George N. Coffey.

Soil Survey of Cecil County, Maryland (376 square miles): One soil map. By Clarence W. Dorsey and Jay A. Bonsteel.

Soil Survey of St. Mary County, Maryland (363 square miles): One soil map. By Jay A. Bonsteel.

Soil Survey of Calvert County, Maryland (217 square miles): One soil map. By Jay A. Bonsteel and R. T. Avon Burke.

Soil Survey of Kent County, Maryland (293 square miles): One soil map. By Jay A. Bonsteel.

Soil Survey from Raleigh to Newbern, North Carolina (parts of Craven, Jones, Wake, Johnston, Wayne, Greene, and Lenoir counties, 965 square miles): One soil map. By Wm. G. Smith. (Map exhausted.)

Soil Survey of Weber County, Utah (310 square miles): One soil map, 1 alkali map, 1 underground water map. By Frank D. Gardner and Charles A. Jensen.

Soil Survey in the Sevier Valley, Utah (parts of Sevier and Sanpete counties, 235 square miles): Two soil maps, 2 alkali maps. By Frank D. Gardner and Charles A. Jensen.

Soil Survey in Salt River Valley, Arizona (part of Maricopa County, 449 square miles): Three soil maps. By Thomas H. Means. (Reprint exhausted.)

Soil Survey around Fresno, California (parts of Fresno and Tulare counties, 628 square miles): One soil map, 1 alkali map. By Thomas H. Means and J. Garnett Holmes. (Reprint exhausted.)

Soil Survey around Santa Ana, California (part of Orange County, 275 square miles): One soil map, 1 alkali map. By J. Garnett Holmes. (Reprint exhausted.)

Field Operations of the Bureau of Soils, 1901. (Third Report.) By Milton Whitney, Chief of Bureau. With accompanying papers by assistants in charge of field parties. Pp. 647, pls. 96, figs. 25, lithograph maps 31. 1902. Price $2.25.

REPRINTS.

Soil Survey of the Westfield Area, New York (part of Chautauqua County, 260 square miles): One soil map. By R. T. Avon Burke and Herbert W. Marean.

Soil Survey of Allegan County, Michigan (828 square miles): One soil map. By Elmer O. Fippin and Thomas D. Rice.

Soil Survey of the Salem Area, New Jersey (parts of Gloucester, Salem, and Cumberland counties, 493 square miles): One soil map. By Jay A. Bonsteel and F. W. Taylor.

Soil Survey of the Lebanon Area, Pennsylvania (parts of Lancaster, Lebanon, and Dauphin counties, 669 square miles): One soil map. By W. G. Smith and Frank Bennett, Jr.

Soil Survey of Prince George County, Maryland (480 square miles): One soil map. By Jay A. Bonsteel and party.

Soil Survey of Harford County, Maryland (418 square miles): One soil map. By W. G. Smith and J. O. Martin.

Soil Survey of the Bedford Area, Virginia (parts of Bedford, Botetourt, and Roanoke counties, 632 square miles): One soil map. By Charles N. Mooney, F. O. Martin, and Thomas A. Caine.

Soil Survey of the Prince Edward Area, Virginia (parts of Prince Edward, Lunenburg, Charlotte, Nottoway, and Amelia counties, 430 square miles): One soil map. By Charles N. Mooney and Thomas A. Caine.

Soil Survey of the Statesville Area, North Carolina (parts of Iredell, Mecklenburg, Lincoln, Catawba, Rowan, and Davie counties, 784 square miles): One soil map. By Clarence W. Dorsey and party.

Soil Survey of Alamance County, North Carolina (365 square miles): One soil map. By George N. Coffey and W. Edward Hearn. (Reprint exhausted.)

Soil Survey of the Cary Area, North Carolina (part of Wake County, 63 square miles): One soil map (colored plate). By George N. Coffey and W. Edward Hearn. (Reprint exhausted.)

Soil Survey of Cobb County, Georgia (346 square miles): One soil map. By R. T. Avon Burke and Herbert W. Marean.

Soil Survey of the Covington Area, Georgia (parts of Jasper, Newton, Walton, Morgan, and Rockdale counties, 225 square miles): One soil map. By Herbert W. Marean.

Soil Survey of Montgomery County, Tennessee (547 square miles): One soil map. By J. E. Lapham and M. F. Miller. (Reprint exhausted.)

Soil Survey of the Yazoo Area, Mississippi (parts of Yazoo, Sharkey, and Issaquena counties, 656 square miles): Two soil maps. By Jay A. Bonsteel and party.

Soil Survey of the Yakima Area, Washington (part of Yakima County, 309 square miles): Two soil maps, 1 alkali map (colored plate), 1 black alkali map (colored plate), 2 underground water maps (colored plates). By Charles A. Jensen and B. A. Olshausen.

Soil Survey of the Boise Area, Idaho (parts of Ada and Canyon counties, 399 square miles): Two soil maps, 1 alkali map, 1 black alkali map. By Charles A. Jensen and B. A. Olshausen.

Soil Survey of the Hanford Area, California (parts of Fresno and Kings counties, 216 square miles): One soil map, 1 alkali map, 1 black alkali map (colored plate), 1 underground water map (colored plate). By Macy H. Lapham and W. H. Heileman.

Soil Survey of the Lower Salinas Valley, California (part of Monterey County, 344 square miles): Two soil maps, 1 underground water map (colored plate). By Macy H. Lapham.

Soil Survey of the Ventura Area, California (part of Ventura County, 240 square miles): One soil map, 1 alkali map. By J. Garnett Holmes and Louis Mesmer.

Soil Survey of the San Gabriel Area, California (parts of Los Angeles and San Bernardino counties, 259 square miles): One soil map. By J. Garnett Holmes and Louis Mesmer.

Soil Survey of the Imperial Area, California (part of San Diego County, 169 square miles): One soil map, 1 alkali map. By Thomas H. Means and J. Garnett Holmes.

Soil Survey of the Willis Area, Texas (part of Montgomery County, 215 square miles): One soil map (colored plate). By J. O. Martin.

Soil Survey of the Lake Charles Area, Louisiana (part of Calcasieu Parish, 202 square miles): One soil map. By W. H. Heileman and Louis Mesmer.

Field Operations of the Bureau of Soils, 1902. (Fourth Report.) By Milton Whitney, Chief. With accompanying papers by assistants in charge of field parties. Pp. 842, pls. 60, figs. 25, maps 44. 1904. Price, cloth, $3.80.

REPRINTS.

Soil Survey of the Bigflats Area, New York (parts of Chemung and Steuben counties, 223 square miles): One soil map. By Louis Mesmer and W. Edward Hearn.

Soil Survey of the Lyons Area, New York (parts of Wayne, Ontario, and Seneca counties, 515 square miles): One soil map. By W. Edward Hearn.

Soil Survey of the Trenton Area, New Jersey (parts of Hunterdon, Somerset, Middlesex, Mercer, Monmouth, Burlington, and Ocean counties, N. J., and Bucks County, Pa., 810 square miles): One soil map. By R. T. Avon Burke and Henry J. Wilder.

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Soil Survey of the Albemarle Area, Virginia (parts of Buckingham, Greene, Augusta, Nelson, Page, and Rockingham counties, 1,410 square miles): Three soil maps. By Charles N. Mooney and F. E. Bonsteel.

Soil Survey of the Hickory Area, North Carolina (parts of Catawba, Lincoln, Burke, Caldwell, Alexander, and Iredell counties, 988 square miles): Two soil maps. By Thomas A. Caine.

Soil Survey of the Mount Mitchell Area, North Carolina (parts of Yancey, Mitchell, Madison, Buncombe, and McDowell counties, 497 square miles): One soil map. By Thomas A. Caine and A. W. Mangum.

Soil Survey of the Abbeville Area, South Carolina (parts of Abbeville, Anderson, Greenwood, and Laurens counties, 1,006 square miles): Two soil maps. By F. W. Taylor and Thomas D. Rice.

Soil Survey of the Darlington Area, South Carolina (part of Darlington County, 595 square miles): One soil map. By Thomas D. Rice and F. W. Taylor.

Soil Survey of Perry County, Alabama (762 square miles): One soil map. By R. T. Avon Burke and party.

Soil Survey of the Smedes Area, Mississippi (parts of Yazoo, Madison, Issaquena, and Sharkey counties, 463 square miles): Two soil maps. By William G. Smith and William T. Carter, jr.

Soil Survey of the Brazoria Area, Texas (part of Brazoria County, 845 square miles): Two soil maps. By Frank Bennett, jr., and Grove B. Jones.

Soil Survey of the Vernon Area, Texas (part of Wilbarger County, 277 square miles): One soil map. By J. E. Lapham and party.

Soil Survey of the Toledo Area, Ohio (parts of Lucas, Wood, and Ottawa counties, Ohio, and Monroe County, Mich., 403 square miles): One soil map. By William G. Smith.

Soil Survey of the Columbus Area, Ohio (parts of Franklin, Pickaway, Licking, Madison, and Fairfield counties, 472 square miles): One soil map. By William G. Smith.

Soil Survey of Union County, Kentucky (361 square miles): One soil map. By Herbert W. Marean.

Soil Survey of Posey County, Indiana (387 square miles): One soil map. By Herbert W. Marean.

Soil Survey of Tazewell County, Illinois (645 square miles): One soil map. By Jay A. Bonsteel, George N. Coffey, and party, in cooperation with the Illinois Experiment Station.

Soil Survey of Clinton County, Illinois (491 square miles): One soil map. By Jay A. Bonsteel and party, in cooperation with the Illinois Experiment Station.

Soil Survey of St. Clair County, Illinois (650 square miles): One soil map. By George N. Coffey and party, in cooperation with the Illinois Experiment Station.

Soil Survey of Clay County, Illinois (460 square miles): One soil map. By George N. Coffey and party, in cooperation with the Illinois Experiment Station.

Soil Survey of the Janesville Area, Wisconsin (parts of Rock and Dane counties, 451 square miles): One soil map. By Jay A. Bonsteel.

Soil Survey of the Dubuque Area, Iowa (parts of Dubuque, Jackson, and Jones counties, Iowa, and Jo Daviess County, Ill., 440 square miles): One soil map. By Elmer O. Fippin.

Soil Survey of Howell County, Missouri (919 square miles): One soil map. By Elmer O. Fippin and James L. Burgess.

Soil Survey of the Stuttgart Area, Arkansas (part of Arkansas County, 251 square miles): One soil map. By J. E. Lapham.

Soil Survey of the Wichita Area, Kansas (parts of Sedgwick and Butler counties, 465 square miles): One soil map. By J. E. Lapham and B. A. Olshausen.

Soil Survey of the Grand Forks Area, North Dakota (part of Grand Forks County, 314 square miles): One soil map, 1 alkali map (colored plate), 1 underground water map (colored plate). By Charles A. Jensen and N. P. Neill.

Soil Survey of the Billings Area, Montana (part of Yellowstone County, 107 square miles): One soil map, 1 alkali map, 1 underground water map, 1 colored plate. By Charles A. Jensen and N. P. Neill.

Soil Survey of the Lewiston Area, Idaho (parts of Nez Perces and Latah counties, 308 square miles): One soil map. By Louis Mesmer.

Soil Survey of the Walla Walla Area, Washington (part of Wallawalla county, 201 square miles): One soil map, 1 black alkali map (colored plate). By J. Garnett Holmes.

Soil Survey of the Lower Arkansas Valley, Colorado (parts of Otero, Bent, Prowers, and Kiowa counties, 945 square miles): Four soil maps, 4 alkali maps (colored plates), 4 underground water maps (colored plates). By Macy H. Lapham and party.

Soil Survey of the Yuma Area, Arizona (part of Yuma County, 99 square miles): One soil map, 1 alkali map. By J. Garnett Holmes.

Soil Survey from Arecibo to Ponce, Porto Rico (330 square miles): One soil map. By Clarence W. Dorsey, Louis Mesmer, and Thomas A. Caine.

Field Operations of the Bureau of Soils, 1903. (Fifth Report.) By Milton Whitney, Chief. With accompanying papers by assistants in charge of field parties. Pp. 1,310, figs. 61, maps 78. 1904. Price $6.35.

ADVANCE SHEETS.

Soil Survey of the Fort Payne Area, Alabama (parts of Dekalb and Cherokee counties, 509 square miles): One soil map. By Grove B. Jones and M. E. Carr.

Soil Survey of the Huntsville Area, Alabama (parts of Limestone and Madison counties, 506 square miles): One soil map. By Frank Bennett, jr., and A. M. Griffen.

Soil Survey of the Mobile Area, Alabama (part of Mobile County, 461 square miles): One soil map. By R. T. Avon Burke and party.

Soil Survey of the Solomonsville Area, Arizona (part of Graham County, 108 square miles): One soil map, 1 alkali map (Plate I). By Macy H. Lapham and N. P. Neill.

Soil Survey of Miller County, Arkansas (626 square miles): One soil map. By J. O. Martin and E. P. Carr.

Soil Survey of the Imperial Area, California (part of San Diego County, 1,084 square miles): One soil map, 1 alkali map. By J. Garnett Holmes and party.

Soil Survey of the Indio Area, California (part of Riverside County, 234 square miles): One soil map, 1 alkali map. By J. Garnett Holmes and party.

Soil Survey of the Los Angeles Area, California (parts of Los Angeles and Orange counties, 570 square miles): One soil map, 1 alkali map. By Louis Mesmer.

Soil Survey of the San Jose Area, California (parts of Santa Clara and Alameda counties, 313 square miles): One soil map. By Macy H. Lapham.

Soil Survey of the San Luis Valley, Colorado (parts of Saguache, Rio Grande, and Costilla counties, 628 square miles): One soil map, 1 alkali map. By J. Garnett Holmes.

Soil Survey of the Connecticut Valley (parts of Hartford County, Conn., and Franklin, Hampshire, and Hampden counties, Mass., 1,314 square miles): Two soil maps. By Elmer O. Fippin.

Soil Survey of the Dover Area, Delaware (part of Kent County, 314 square miles): One soil map. By F. E. Bonsteel and O. L. Ayrs.

Soil Survey of Gadsden County, Florida (548 square miles): One soil map. By Elmer O. Fippin and Aldert S. Root.

Soil Survey of the Fort Valley Area, Georgia (parts of Macon and Houston counties, 186 square miles): One soil map. By William G. Smith and William T. Carter, jr.

Soil Survey of the Blackfoot Area, Idaho (parts of Fremont and Bingham counties, 428 square miles): Two soil maps. By W. E. McLendon.

Soil Survey of Johnson County, Illinois (339 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Knox County, Illinois (717 square miles): One soil map. By George N. Coffey and party.

Soil Survey of McLean County, Illinois (1,159 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Sangamon County, Illinois (866 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Winnebago County, Illinois (526 square miles): One soil map. By George N. Coffey and party.

Soil Survey of Madison County, Indiana (435 square miles): One soil map. By R. T. Avon Burke and La Mott Ruhlen.

Soil Survey of Cerro Gordo County, Iowa (567 square miles): One soil map. By Herbert W. Marean and Grove B. Jones.

Soil Survey of Story County, Iowa (576 square miles): One soil map. By Herbert W. Marean and Grove B. Jones.

Soil Survey of the Parsons Area, Kansas (parts of Labette and Cherokee counties, 398 square miles): One soil map. By J. A. Drake.

Soil Survey of the Russell Area, Kansas (part of Russell County, 270 square miles): One soil map. By A. W. Mangum and J. A. Drake.

Soil Survey of Mason County, Kentucky (225 square miles): One soil map. By R. T. Avon Burke and La Mott Ruhlen.

Soil Survey of Scott County, Kentucky (280 square miles): One soil map. By R. T. Avon Burke.

Soil Survey of Acadia Parish, Louisiana (636 square miles): One soil map. By Thomas D. Rice and Lewis Griswold.

Soil Survey of the New Orleans Area, Louisiana (parts of Orleans, Plaquemines, Jefferson, St. Charles, and St. John the Baptist parishes, 410 square miles): One soil map. By Thomas D. Rice and Lewis Griswold.

Soil Survey of the Ouachita Area, Louisiana (part of Ouachita Parish, 605 square miles): One soil map. By Thomas D. Rice and George N. Coffey.

Soil Survey of Worcester County, Maryland (463 square miles): One soil map. By F. E. Bonsteel and William T. Carter, jr.

Soil Survey of the Pontiac Area, Michigan (part of Oakland County, 307 square miles): One soil map. By Henry J. Wilder and W. J. Geib.

Soil Survey of the Marshall Area, Minnesota (part of Lyon County, 233 square miles): One soil map. By Henry J. Wilder.

Soil Survey of Shelby County, Missouri (511 square miles): One soil map. By R. T. Avon Burke and La Mott Ruhlen.

Soil Survey of the McNeill Area, Mississippi (parts of Pearl River and Hancock counties, 198 square miles): One soil map. By William G. Smith and William T. Carter, jr.

Soil Survey of the Grand Island Area, Nebraska (parts of Hall, Buffalo, and Hamilton counties, 446 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Stanton Area, Nebraska (parts of Pierce, Wayne, Madison, and Stanton counties, 323 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Long Island Area, New York (parts of Kings, Queens, Nassau, and Suffolk counties, 845 square miles): Two soil maps. By Jay A. Bonsteel and party. (Advance sheet exhausted.)

Soil Survey of the Syracuse Area, New York (parts of Oswego and Onondaga counties, 416 square miles): One soil map. By F. E. Bonsteel, William T. Carter, jr., and O. L. Ayrs.

Soil Survey of the Asheville Area, North Carolina (parts of Buncombe, Madison, and Haywood counties, 497 square miles): One soil map. By J. E. Lapham and F. N. Meeker.

Soil Survey of the Craven Area, North Carolina (parts of Pitt, Craven, and Jones counties, 897 square miles): One soil map. By George N. Coffey and William G. Smith.

Soil Survey of the Fargo Area, North Dakota (part of Cass County, 406 square miles): One soil map. By Thomas A. Caine.

Soil Survey of the Jamestown Area, North Dakota (parts of Stutsman and Barnes counties, 496 square miles): One soil map. By Thomas A. Caine and A. E. Kocher.

Soil Survey of Ashtabula County, Ohio (340 square miles): One soil map. By J. O. Martin and E. P. Carr.

Soil Survey of the Baker City Area, Oregon (part of Baker County, 158 square miles): One soil map, 1 alkali map, 1 black alkali map, 1 underground water map. By Charles A. Jensen and W. W. Mackie.

Soil Survey of the Salem Area, Oregon (parts of Marion and Polk counties, 284 square miles): One soil map. By Charles A. Jensen.

Soil Survey of the Lockhaven Area, Pennsylvania (part of Clinton County, 278 square miles): One soil map. By J. O. Martin.

Soil Survey of the Campobello Area, South Carolina (parts of Greenville and Spartanburg counties, 515 square miles): One soil map. By A. W. Mangum and Albert S. Root.

Soil Survey of the Brookings Area, South Dakota (part of Brookings County, 484 square miles): One soil map. By Frank Bennett, jr.

Soil Survey of Davidson County, Tennessee (501 square miles): One soil map. By William G. Smith and Hugh H. Bennett.

Soil Survey of the Pikeville Area, Tennessee (parts of Van Buren, Bledsoe, Rhea, and Sequatchie counties, 440 square miles): One soil map. By Henry J. Wilder and W. J. Geib.

Soil Survey of the Jacksonville Area, Texas (part of Cherokee County, 100 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Lufkin Area, Texas (part of Angelina County, 99 square miles): One soil map. By W. Edward Hearn and party.

Soil Survey of the Nacogdoches Area, Texas (part of Nacogdoches County, 97 square miles): One soil map. By W. Edward Hearn and James L. Burgess.

Soil Survey of the Paris Area, Texas (part of Lamar County, 548 square miles): One soil map. By Thomas A. Caine and A. E. Kocher.

Soil Survey of the Woodville Area, Texas (part of Tyler County, 100 square miles): One soil map. By J. E. Lapham and party.

Soil Survey of the Provo Area, Utah (part of Utah County, 373 square miles): Two soil maps, 2 alkali maps, 2 black alkali maps (Plates II and III), 2 underground water maps. By Alfred M. Sanchez.

Soil Survey of the Leesburg Area, Virginia (parts of Loudoun County, Va., Frederick and Washington counties, Md., and Jefferson County, W. Va., 419 square miles): One soil map. By William T. Carter, jr., and W. S. Lyman.

Soil Survey of the Norfolk Area, Virginia (part of Princess Anne County, 303 square miles): One soil map. By J. E. Lapham.

Soil Survey of the Viroqua Area, Wisconsin (parts of Monroe and Vernon counties, 504 square miles): One soil map. By William G. Smith.

Soil Survey of the Laramie Area, Wyoming (part of Albany County, 309 square miles): One soil map, 1 alkali map, 1 black alkali map. By N. P. Neill and party.

Field Operations of the Bureau of Soils, 1904. (Sixth Report.) By Milton Whitney, Chief. With accompanying papers by assistants in charge of field parties. Pp. 1,159, pl. 1, figs. 45, maps 53. 1905.

ADVANCE SHEETS.

Soil Survey of Rhode Island (1,085 square miles): Two soil maps. By F. E. Bonsteel and E. P. Carr.

Soil Survey of the Vergennes Area, Vermont-New York (parts of Addison County, Vt., and Essex County, N. Y., 387 square miles): One soil map. By Henry J. Wilder and H. L. Belden.

Soil Survey of the Auburn Area, New York (part of Cayuga County, 461 square miles): One soil map. By J. E. Lapham and Hugh H. Bennett.

Soil Survey of Adams County, Pennsylvania (534 square miles): One soil map. By Henry J. Wilder and H. L. Belden.

Soil Survey of Appomattox County, Virginia (340 square miles): One soil map. By Thomas A. Caine and Hugh H. Bennett.

Soil Survey of Lancaster County, South Carolina (486 square miles): One soil map. By Aldert S. Root and L. A. Hurst.

Soil Survey of the Orangeburg Area, South Carolina (part of Orangeburg County, 710 square miles): One soil map. By Frank Bennett and party.

Soil Survey of the Charleston Area, South Carolina (parts of Charleston and Colleton counties, 352 square miles): One soil map. By F. E. Bonsteel and E. P. Carr.

Soil Survey of Dodge County, Georgia (489 square miles): One soil map. By Charles W. Ely and A. M. Griffen.

Soil Survey of the Bainbridge Area, Georgia (part of Decatur County, 364 square miles): One soil map. By Elmer O. Fippin and J. A. Drake.

Soil Survey of the Gainesville Area, Florida (parts of Alachua, Levy, and Marion counties, 485 square miles): One soil map. By Thomas D. Rice and W. J. Geib.

Soil Survey of Macon County, Alabama (621 square miles): One soil map. By Henry J. Wilder and Hugh H. Bennett.

Soil Survey of Sumter County, Alabama (893 square miles): One soil map. By William G. Smith and Fred N. Meeker.

Soil Survey of the Jackson Area, Mississippi (parts of Hinds and Rankin counties, 737 square miles): One soil map. By J. O. Martin and O. L. Ayrs.

Soil Survey of the Biloxi Area, Mississippi (part of Harrison County, 616 square miles): One soil map. By W. Edward Hearn and M. E. Carr.

Soil Survey of the De Soto Parish, Louisiana (825 square miles): One soil map. By Grove B. Jones and La Mott Ruhlen.

Soil Survey of Anderson County, Texas (1,069 square miles): One soil map. By William T. Carter, jr., and A. E. Kocher.

Soil Survey of the Austin Area, Texas (parts of Bastrop, Caldwell, Hays, Travis, and Williamson counties, 705 square miles): One soil map. By A. W. Mangum and H. L. Belden.

Soil Survey of the San Antonio Area, Texas (part of Bexar County, 484 square miles): One soil map. By Thomas A. Caine and W. S. Lyman.

Soil Survey of Lawrence County, Tennessee (618 square miles): One soil map. By Charles N. Mooney and O. L. Ayrs.

Soil Survey of the Greeneville Area, Tennessee-North Carolina (parts of Greene, Hawkins, Cocke, and Sullivan counties, Tenn., and Madison County, N. C., 664 square miles): One soil map. By Charles N. Mooney and O. L. Ayrs.

Soil Survey of Warren County, Kentucky (533 square miles): One soil map. By Thomas D. Rice and W. J. Geib.

Soil Survey of Wooster Area, Ohio (parts of Wayne, Stark, and Summit counties, 469 square miles): One soil map. By Thomas A. Caine and W. S. Lyman.

Soil Survey of Coshocton County, Ohio (551 square miles): One soil map. By Thomas D. Rice and W. J. Geib.

Soil Survey of the Munising Area, Michigan (part of Alger County, 407 square miles): One soil map. By Thomas D. Rice and W. J. Geib.

Soil Survey of the Saginaw Area, Michigan (parts of Saginaw, Bay, Tuscola, and Huron counties, 984 square miles): One soil map. By W. E. McLendon and M. Earl Carr.

Soil Survey of the Alma Area, Michigan (part of Gratiot County, 283 square miles): One soil map. By W. Edward Hearn and A. M. Griffen.

Soil Survey of the Owosso Area, Michigan (part of Shiawassee County, 270 square miles): One soil map. By A. W. Mangum and Charles J. Mann.

Soil Survey of Marshall County, Indiana (445 square miles): One soil map. By Frank Bennett and Charles W. Ely.

Soil Survey of Scott County, Indiana (197 square miles): One soil map. By A. W. Mangum and N. P. Neill.

Soil Survey of the Boonville Area, Indiana (parts of Warrick and Spencer counties, 264 square miles): One soil map. By A. W. Mangum and N. P. Neill.

Soil Survey of the Superior Area, Wisconsin-Minnesota (parts of Douglas County, Wis., and St. Louis County, Minn., 483 square miles): One soil map. By Thomas A. Caine and W. S. Lyman.

Soil Survey of Tama County, Iowa (720 square miles): One soil map. By Charles W. Ely, George N. Coffey, and A. M. Griffen.

Soil Survey of Saline County, Missouri (748 square miles): One soil map. By M. Earl Carr and H. L. Belden.

Soil Survey of the O'Fallon Area, Missouri-Illinois (parts of Lincoln, St. Charles, St. Louis counties, Mo., and Calhoun County, Ill., 620 square miles): One soil map. By Elmer O. Fippin and J. A. Drake.

Soil Survey of Webster County, Missouri (605 square miles): One soil map. By J. A. Drake and A. T. Strahorn.

Soil Survey of the Kearney Area, Nebraska (parts of Dawson, Buffalo, Phelps, Kearney, and Gosper counties, 792 square miles): One soil map, 1 alkali map (colored plate). By J. O. Martin and A. T. Sweet.

Soil Survey of Allen County, Kansas (504 square miles): One soil map. By J. A. Drake and W. E. Tharp.

Soil Survey of the Garden City Area, Kansas (parts of Finney and Gray counties, 336 square miles): One soil map. By James L. Burgess and George N. Coffey.

Soil Survey of the Cando Area, North Dakota (part of Towner County, 283 square miles): One soil map. By Elmer O. Fippin and James L. Burgess.

Soil Survey of the Greeley Area, Colorado (parts of Weld and Larimer counties, 687 square miles): One soil map. By J. Garnett Holmes and N. P. Neill.

Soil Survey of the Bear River Area, Utah (part of Box Elder County, 334 square miles): One soil map, 1 alkali map, 1 underground water map. By Charles A. Jensen and A. T. Strahorn.

Soil Survey of the Yuma Area, Arizona-California (parts of Yuma County, Ariz., and San Diego County, Cal., 340 square miles): One soil map, 1 alkali map. By J. Garnett Holmes, Charles A. Jensen, Herbert W. Marean, N. P. Neill, Aldert S. Root, W. E. McLendon, J. L. Burgess, A. T. Strahorn, and A. T. Sweet.

Soil Survey of the Sacramento Area, California (parts of Sacramento, Sutter, Yuba, Placer, and Eldorado counties, 924 square miles): One soil map. By Macy H. Lapham and W. W. Mackie.

Soil Survey of the Bakersfield Area, California (part of Kern County, 195 square miles): One soil map, 1 alkali map, 1 black alkali map. By Macy H. Lapham and Charles A. Jensen.

Soil Survey of the San Bernardino Area, California (parts of Orange, Riverside, and San Bernardino counties, 755 square miles): One soil map. By J. Garnett Holmes, N. P. Neill, W. E. McLendon, A. T. Sweet, Aldert S. Root, and Herbert W. Marean.

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REPORTS.

Report No. 58. Cultivation of Tobacco in Sumatra. By Emile Mulder. Pp. 39, figs. 3, map. 1898. Price 5 cents. (20)

So much interest is taken in the growing of cigar wrapper leaf tobacco in this country at present and the competition of Sumatra is so active that it seems important to lay before our tobacco growers all the information possible in regard to the conditions and methods of production in that country. The superiority of the Sumatra leaf is due partly to fashion, as the leaf makes a fine, smooth wrapper, which looks well in a case; partly to economy, as a pound will cover four or five times as many cigars as a pound of domestic leaf, giving very little waste; and partly to fine assortment as to length, color, and shade, which enables small manufacturers to maintain a particular brand with a small stock of wrapper leaf to select from.

Report No. 59. Curing and Fermentation of Cigar Leaf Tobacco. By Oscar Loew. In cooperation with the Division of Vegetable Physiology and Pathology. Pp. 34. 1899. Price 5 cents. (Exhausted.) (16)

This is a rather technical discussion of the changes induced in the curing, fermentation, and aging of tobacco; with the description of the real cause of the fermentation of cigar leaf tobacco, which is of the greatest scientific interest and economic value as giving the basis for better methods of curing and fermenting tobacco.

Report No. 60. Temperature Changes in Fermenting Piles of Cigar Leaf Tobacco. By Milton Whitney and Thomas H. Means, in cooperation with the Division of Vegetable Physiology and Pathology. Pp. 28, figs. 7. 1899. Price 5 cents. (18)

This contains a somewhat popular résumé of Dr. Loew's investigation of the cause of fermentation, together with a discussion of the temperature changes in the fermentation of Florida tobacco.

Report No. 62. Cultivation of Cigar Leaf Tobacco in Florida. By Marcus L. Floyd, in cooperation with the Division of Vegetable Physiology and Pathology. Pp. 31, pls. 8, figs. 6. 1899. Price 10 cents. (24)

This is a thoroughly practical description of the method of growing, curing, and handling tobacco in Florida, where the greatest recent advances have been made in the cultivation and curing of cigar leaf tobacco.

Report No. 63. The Work of the Agricultural Experiment Stations on Tobacco. Abstracted by J. S. Schulte, with introduction and comment by Milton Whitney. In cooperation with the Office of Experiment Stations. Pp. 48. 1900. Price 5 cents. (26)

This is a résumé of the work of the experiment stations of the United States on tobacco.

Report No. 65. Physiological Studies of Connecticut Leaf Tobacco. By Oscar Loew. In cooperation with the Division of Vegetable Physiology and Pathology. Pp. 57. 1900. Price 5 cents. (31)

The work herein recorded deals with a number of questions relating to the physiology of the leaf and the changes which take place during the processes of curing and fermenting tobacco.

Report No. 68. Catalase. A New Enzym of General Occurrence, with special reference to the tobacco plant. By Oscar Loew, cooperating with the Division of Vegetable Physiology and Pathology. Pp. 47. 1901. Price 5 cents. (39)

A technical paper relating to a new enzym occurring in the tobacco plant, and probably having much to do with the fermentation and possibly with the development of the flavor and aroma in tobacco.

Report No. 70. Exhaustion and Abandonment of Soils. Testimony of Milton Whitney, Chief of the Division of Soils, before the Industrial Commission. Pp. 48. 1901. Price 5 cents. (46)

This report gives in considerable detail the causes leading to the exhaustion of soils and the consequent abandonment of large areas of lands in the East and South, and discusses the alkali lands of the West, with suggestions looking to their reclamation. Farming and business methods, social conditions, adaptation of crops to soils, climate, transportation, and the development of new areas and industries, together with suggestions relating to fertilization, rotation and specialization of crops, irrigation, and drainage, are discussed.

Report No. 71. Some Mutual Relations between Alkali Soils and Vegetation. By Thos. H. Kearney and Frank K. Cameron. Issued in cooperation with the Division of Vegetable Physiology and Pathology. Pp. 78. 1902. Price 5 cents. (44)

This report comprises three technical papers. An investigation is described in which the toxic limits of concentration of certain aqueous solutions for seedlings of the white lupine and alfalfa were determined, the chemical and physiological significance of the results considered, and suggestions of economic applications made. The formation of "black alkali" by vegetation and the resistance to this substance by certain plants is considered in connection with experimental data obtained in field and laboratory studies.

CIRCULARS.

Circular No. 1. Announcement. By Milton Whitney. March, 1894. (Exhausted.) (1)

This contains an announcement of the object, purposes, and lines of work of the Division of Soils when first established.

Circular No. 2. Instructions for Taking Samples of Soil for Moisture Determinations. By Milton Whitney. April, 1894. (Exhausted.) (2)

This contains instructions for taking samples of soils for moisture determinations, issued to the observers and special agents of the Division. The method in use at that time has been greatly modified.

Circular No. 3. The Soils of the Pecos Valley, New Mexico. By Thos. H. Means and Frank D. Gardner. 1900. (27)

This describes in a concise and popular way the climate, drainage area, irrigation systems, and soils of the Roswell, Hagerman, Carlsbad, and Barstow areas of the Pecos Valley. It discusses the character of the water, the kind and amount of alkali in the soils, the cause of the accumulation of alkali, and the methods for preventing injury and for reclaiming already injured lands.

Circular No. 4. A Soil Survey in Salt Lake County, Utah. By Frank D. Gardner, of the Division of Soils, and John Stewart, of the Utah Experiment Station. In cooperation with the Utah Experiment Station. Fig. 1. 1900. (28)

This circular discusses in a popular manner the early irrigation and recent improvements in methods and equipment, the climate, water supply, soils, alkali, and drainage. It discusses in a general way the origin of the alkali, the cause of the accumulation, and the methods of reclaiming damaged lands.

Circular No. 5. Bulk Fermentation of Connecticut Tobacco. By Marcus L. Floyd. In cooperation with the Connecticut Experiment Station. 1900. (29)

This circular describes the ordinary method of fermenting in cases, the method of fermenting in bulk, and the results obtained by fermentation in bulk of some Connecticut tobacco.

Circular No. 6. Instructions for Determining in the Field the Salt Content of Alkali Waters and Soils. By Milton Whitney. March, 1900. (Exhausted.) (32)

A technical paper prepared for the field agents of the Division of Soils in the survey and mapping of alkali lanc

Circular No. 7. Description of a Soil Map of the Connecticut Valley. By Milton Whitney. June, 1900. (Exhausted.) (37)

A special circular of a very small edition, descriptive of a small separate edition of the Connecticut Valley soil map, to be distributed to a few individuals and institutions for educational purposes.

Circular No. 8. Reclamation of Salt Marsh Lands. By Thos. H. Means. 1901. (45)

At the suggestion of the Entomologist of the Department, who was experimenting with a view to the extermination of mosquitoes in marshes, a preliminary examination of the salt marsh lands in the vicinity of Oyster Bay, Long Island, was made. This circular contains suggestions with regard to reclamation in general for the purpose of washing out salt and removing excess water, cultivation of marsh crops during the reclamation, and the agricultural value of marsh lands.

Circular No. 9. Soil Survey around Imperial, California. By Thos. H. Means and J. Garnett Holmes. Figs. 2. 1902. (62)

A description of the survey of 169 square miles made in the Colorado Desert, San Diego County, Cal., in the vicinity of Imperial; topography; development of the irrigation system; descriptions of soil types encountered; alkali conditions; salt contents of soil types; analyses and general agricultural conditions and possibilities of improvement.

Circular No. 10. The Use of Alkaline and Saline Waters for Irrigation. By Thos. H. Means.

This circular gives an account of the use of saline waters in irrigation in Algeria and points out that a much more salty water can be used successfully in irrigating certain crops than has hitherto been believed.

Circular No. 11. Reclamation of Alkali Land at Fresno, California. By Thos. H. Means and W. H. Heileman.

A report on the progress of the reclamation of a 20-acre tract of alkali land, near Fresno, Cal. A description is given of the installation of the drainage system and of other steps in the work. The results of this demonstration experiment thus far indicate the ultimate complete reclamation of the lands and prove the method of reclamation by underdrainage to be practicable and economical.

Circular No. 12. Reclamation of Alkali Land near Salt Lake City, Utah. By W. H. Heileman.

A report on the progress of a similar demonstration experiment near Salt Lake City, Utah.

Circular No. 13. The Work of the Bureau of Soils.

A condensed account of the work of the Bureau of Soils, with particular attention to its practical side.

Circular No. 14. Opportunities for the Production of Cigar Leaf Tobacco in East Texas and Alabama.

A special circular giving a brief history of the tobacco investigations conducted in east Texas and Perry County, Alabama, describing the soils best adapted to the culture of tobacco, giving the acreage of these soils in each locality, and also outlining a plan for future cooperative work in Texas and Alabama.

Circular No. 15. Manurial Requirements of the Leonardtown Loam Soil of St. Mary County, Md. By Frank D. Gardner. 1905.

A popular paper setting forth the value of various kinds of commercial fertilizers, lime, manure, and green manure as applications for this particular soil. The paraffine wire-basket method, by which these determinations were made, is also briefly described.

Circular No. 16. Manurial Requirements of the Cecil Silt Loam of Lancaster County, S. C. By Frank D. Gardner and F. E. Bonsteel. 1905.

A popular paper setting forth the value of various commercial fertilizers, lime, manure and green manure, as a means of improving this particular type of soil.

Circular No. 17. Manurial Requirements of the Portsmouth Sandy Loam of the Darlington area, South Carolina. By Frank D. Gardner and F. E. Bonsteel. 1905.

A popular paper setting forth the value of commercial fertilizers, lime, manure, and green manure as a means of improving the productivity of this particular type of soil.

Circular No. 18. The Wire-basket Method for Determining the Manurial Requirements of Soils. By Frank D. Gardner. 1906.

A popular paper briefly describing the method as used by the Bureau of Soils, together with modifications making it practicable for the use of those having no laboratory facilities or apparatus.

FARMERS' BULLETINS.

Farmers' Bulletin No. 60. Methods of Curing Tobacco. (Revised edition.) By Milton Whitney. Pp. 16. (15)

This bulletin discusses the curing of northern cigar tobacco, curing tobacco in Florida, curing White Burley tobacco, curing bright yellow tobacco, curing export tobacco, marketing tobacco, and the types of tobacco.

Farmers' Bulletin No. 82. The Culture of Tobacco. By Otto Carl Butterweck. Pp. 24. (17)

This bulletin describes the selecting of seed, the seed bed and how prepared in the different tobacco districts, sowing the seed, time of sowing seed, planting, cultivation, fertilizers, topping, cutting, saving seed, and the insect pests.

Farmers' Bulletin No. 83. Tobacco Soils. By Milton Whitney. Pp. 23, fig. 1. (19)

This discusses the climate, distribution of tobacco, soils of the several districts, and the water content of tobacco soils.

Farmers' Bulletin No. 88. Alkali Lands. By Milton Whitney and Thos. H. Means. Pp. 22, fig. 1. (22)

The material in this bulletin is rewritten in popular style from material contained in Bulletin No. 14, a technical publication relating to alkali soils. It shows the conditions in the Yellowstone Valley; rainfall and seepage; the method of making salt determinations; types of soils in the valley, with effects of underdrainage in removing salts, etc.

Farmers' Bulletin No. 40. Farm Drainage. By C. G. Elliot, C. E., Member of the American Society of Civil Engineers, Peoria, Ill. Pp. 24, figs. 6. (Exhausted.)

List of Publications of the Division of Soils. Edition of March, 1906.

REPRINTS.

Truck Lands of the Atlantic Seaboard. By Milton Whitney. Pp. 129–153, figs. 3. Yearbook, 1894.

Tobacco Soils of Connecticut and Pennsylvania. By Milton Whitney. Pp. 143–155, figs. 7. Yearbook, 1894.

Conditions in Soils of the Arid Regions. By Milton Whitney. Pp. 155–164. Yearbook, 1894.

Reasons for cultivating the Soil. By Milton Whitney. Pp. 123–130. Yearbook, 1895. (Exhausted.)

Division of Soils. By Milton Whitney. Pp. 122–135. Yearbook, 1897. (Exhausted.)

Some Interesting Soil Problems. By Milton Whitney. Pp. 429–440. Yearbook, 1897. (Exhausted.)

The Movement and Retention of Water in Soils. By Lyman J. Briggs. Pp. 399–404. Yearbook, 1898. (Exhausted.)

The Soluble Mineral Matter of Soils. By Thos. H. Means. Pp. 495–504. Yearbook, 1898.

Soil Investigations in the United States. By Milton Whitney. Pp. 335–346. Yearbook, 1899.

Growth of the Tobacco Industry. By Milton Whitney and Marcus L. Floyd. Pp. 429–440, 7 plates. Yearbook, 1899.

Application of the Theory of Solutions to the Study of Soils. By Frank K. Cameron. Pp. 141–172. Report No. 64, Field Operations of the Division of Soils, 1899. (Exhausted.)

Some Necessary Modifications in Methods of Mechanical Analysis as Applied to Alkali Soils. By Lyman J. Briggs. Pp. 173–183, fig. 1, plate 1. Report No. 64, Field Operations of the Division of Soils, 1899. (Exhausted.)

Salts as Influencing the Rate of Evaporation from Soils. By Lyman J. Briggs. Pp. 184–198, figs. 8, plate 1. Report No. 64, Field Operations of the Division of Soils, 1899. (Exhausted.)

The World's Exhibit of Leaf Tobacco at the Paris Exposition of 1900. By Marcus L. Floyd. Pp. 157–166. Yearbook, 1900.

Objects and Methods of Investigating Certain Physical Properties of Soils. By Lyman J. Briggs. Pp. 397–410. Yearbook, 1900.

The Purpose of a Soil Survey. By Milton Whitney. Pp. 117–132. Yearbook, 1900. (Exhausted.)

General Review of the Work of the Division of Soils. By Milton Whitney. Pp. 19–60. Field Operations of the Division of Soils, 1900. (47)

Investigations on the Physical Properties of Soils. By Lyman J. Briggs. Pp. 413–421, fig. 1. Field Operations of the Division of Soils, 1900. (Exhausted.) (59)

Application of the Theory of Solution to the Study of Soils. By Frank K. Cameron. Pp. 423–453. Field Operations of the Division of Soils, 1900. (60)

Some Results of Investigations in Soil Management. By F. H. King. Pp. 159–174. Yearbook, 1903. (Exhausted.)

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